

district I found a tract which was roughly a half a mile long and a quarter of a mile wide, containing small scattered colonies of *Habenaria clavellata* in full bloom. A careful examination of more than one hundred plants throughout this area, showed that the blossoms of at least one fourth of them (probably more) had the end of their spurs divided into two distinct divergent lobes. The accompanying plate (131) shows this peculiarity so clearly that no further description is needed. The three specimens, which by no means represent extreme cases, are shown approximately full size.

This departure from the usual form of spur in this orchid is so unusual, if not actually unique, and so different in *kind* from the examples mentioned above, that it seems to me to be not only of considerable interest in itself, but worthy of record. Indeed, from the abundance of such plants at this station, I am inclined to wonder if this peculiarity may not be expected to continue to appear in their succeeding generations. If this should prove to be the case, it may then be reasonable to consider whether they do not constitute a true variety.

In this connection, it seems to me to be well worth while to learn whether this division of the spur-tip is persistent or not in this locality, and to this end I would be very glad to hear from some local botanist who would be willing to report on these plants next summer.

BUFFALO, NEW YORK.

THE SOIL REACTIONS OF SPIRANTHES CERNUA AND ITS RELATIVES.

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IN "Observations on the soil acidity of Ericaceae and associated plants in the Middle Atlantic States", ¹ the range of *Spiranthes cernua* (*Ibidium cernuum*) was given as from specific acidity 300 to 3, with optimum at 30. This is an unusually wide range for a single species (or variety), and it was suspected that the plants tested might not all be the same, although no opportunity for studying them more critically came to the writer. The matter has now been cleared up by Mr. Ames' recent article, "Notes on New England orchids,—I. Spiran-

¹ Proc. Acad. Nat. Sci. Phila., 1920, 110.

thes.”¹ He finds that typical *Spiranthes cernua* grows in association with *Calopogon* and *Arethusa*, in “sour” soils, and in dry fields among ericaceous plants. The soils in such habitats normally range in reaction from specific acidity 300 down to 30 but only exceptionally go lower than that. This species is therefore evidently a high-acid soil plant. It may be noted, further, that its occurrence both in bogs and in dry fields shows that it, like other reaction-sensitive plants, is relatively indifferent to the water content of a soil.

Spiranthes cernua variety *ochroleuca* he states to grow, on the other hand, in “woodlands and rich upland pastures,” which are likely to show a specific acidity of 10 or less. It appears, therefore, that this variety is a low-acid soil plant. The writer has found it in bogs as well as in woods, so that it also is indifferent to wetness or dryness. The reaction relations of the two plants may be brought out by a tabulation according to the plan previously used; the reaction ranges of both of them are then seen to be of the order of magnitude commonly met with in individual varieties of orchids.

Specific acidity.....	300	100	30	10	3	1
<i>Spiranthes cernua</i> , typical.....	x	x	x	?	—	—
var. <i>ochroleuca</i>	—	—	?	x	x	x

Spiranthes odorata has been found to favor subacid soils, being thus intermediate in reaction between the above two. It is difficult to agree, however, with Small, Britton & Brown, and Ames, that this plant is conspecific with *S. cernua*; for where the two grow near together, as in the vicinity of Washington, D. C., they are distinct in many respects, and have, moreover, been found to retain their distinctness when grown in cultivation side by side in the same subacid soil. Some of their more striking differences are brought out by the tabulation on the next page; Schlechter notes still others.

The writer will be glad to send fresh specimens of both plants to anyone who wishes to confirm these features, during the coming September.

It would be hard to imagine two members of a single genus being more divergent; and search for intermediate forms in places where the two grow in abundance within a few hundred meters of each other has been unsuccessful. What might have been taken for an intermediate has been collected in a cat-tail marsh at Cape May, New

¹ RHODORA, xxiii, 73, 1921.

	SPIRANTHES ODORATA	SPIRANTHES CERNUA
Habitat	Tidal marsh, with <i>Zizania</i> , <i>Peltandra</i> , <i>Bidens</i> , etc.	Meadows, with sphagnum, <i>Pogonia ophioglossoides</i> , <i>Gentiana saponaria</i> , etc.
Soil reaction	Subacid, the decomposing vegetation being partially neutralized by calcareous river water.	Mediacid or less commonly subacid, as in typical sphagnum bogs and meadows.
Blooming time	Mid-September.	Late September to late October.
Plant habit	Up to one meter tall, with large, prominent leaves.	About 3 decimeters tall, with small, inconspicuous leaves.
Flowers:		
arrangement	In regular, slightly spiralled rows.	In rather irregular rows.
color	Dull yellowish white.	White with slight creamy tinge.
size	Up to 12 mm. long.	Around 8 mm. long.
fragrance	Extremely strong, a single spike scenting a large room.	So faint as to be detected only with difficulty.
lip	Somewhat contracted in middle, and with prominent incurved callosities.	Not contracted in middle, and with rather small, little-curved callosities.
Roots	Cord-like, tough, 8-20 cm. long, mostly tipped with a shoot which forms a new plant the following season (stolons).	Fleshy, weak, 2-8 cm. long, not observed to possess terminal shoots.

Jersey (where typical *S. odorata* is unknown), but critical examination indicates it to be merely unusually luxuriant *S. cernua* var. *ochroleuca*. A protest is therefore here raised against the reduction of our magnificent fragrant "ladies-tresses" to mere varietal rank.

WASHINGTON, D. C.